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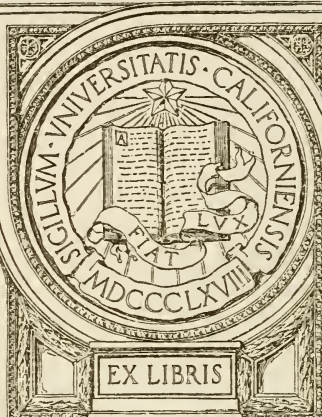
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# The Cattle Tick

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## INTRODUCTORY

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The area infected with the cattle tick includes Florida, Alabama, Georgia, Mississippi, Louisiana, Arkansas, two-thirds of Texas, half of Oklahoma, half of North Carolina, nearly all of South Carolina, a few counties in Tennessee and also one or two counties in California.

It is estimated that the annual loss due to the cattle tick is approximately \$100,000,000.

The facts relative to the cattle tick set forth in the following pages should be known to every Southern farmer. By united effort the tick pest can be destroyed, and its destruction will save the Southern farmer millions of dollars. Everyone who owns cattle in the infected area is interested in knowing how to destroy the cattle tick.

## The Cattle Tick and How to Destroy It\*

There are various kinds of species of ticks to be found on cattle in the Southern States, but the one that chiefly concerns us here is that commonly called the "cattle" or "Texas-fever" tick. It is the one most frequently found on cattle and is much more abundant than the other species. When the losses occasioned by this parasite are once thoroughly understood by farmers and stockmen there will be little need for arguments in favor of tick eradication. Some of the losses are not directly noticeable and consequently make little impression, while other losses properly chargeable to the tick are frequently attributed to other causes.

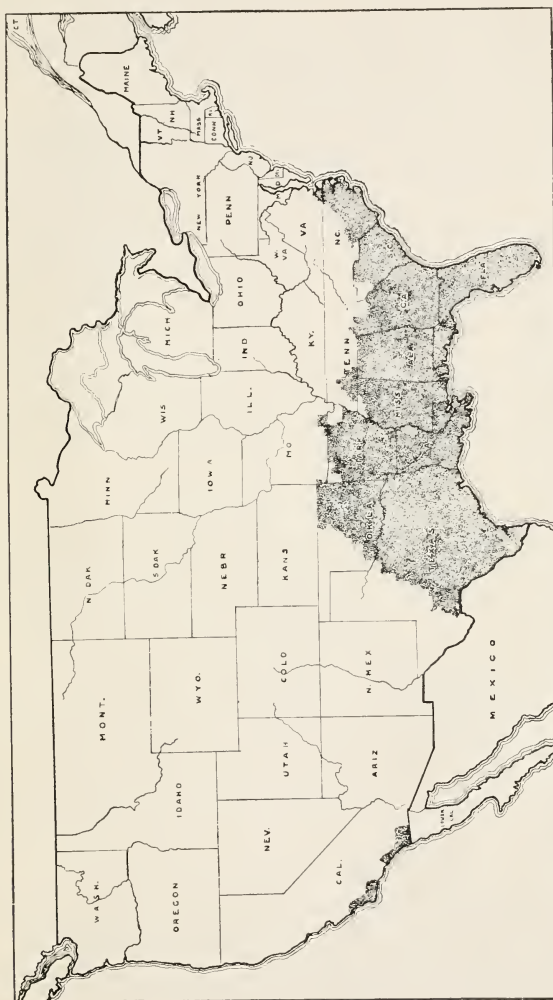
It is hardly necessary to emphasize the important fact that the tick is something more than a simple parasite drawing blood from his host, it being the carrier of a dangerous micro-organism or germ, which it transmits to the blood of cattle, thus causing a disease known by many names, among which are Texas fever, tick fever, splenetic fever, and murrian. Without the tick there can be no Texas fever, and it is by preventing the spread of the tick beyond its natural bounds that the fever has been prevented from waging destruction among Northern cattle, which are especially susceptible to the disease. In order to restrict the distribution of the tick the national and state government maintain a quarantine line extending from the Atlantic to the Pacific coast, marking the boundary between the states or portions of states harboring this pest and those that do not. Cattle of the quarantined area can not be driven across this line, and may be shipped only in accordance with the regulations of the Secretary of Agriculture to prevent the spread of splenetic fever of cattle.

The more important losses for which the tick is responsible are as follows:

1. Deaths from tick fever among native cattle and pure-bred cattle imported from the North for breeding purposes.
2. Deaths of cattle north of the quarantine line from fever following the occasional accidental introduction of the tick.
3. The temporary and permanent arrest of growth and development resulting from attacks of the fever.
4. The decrease in weight and the lessened rate in putting on flesh in the case of beef cattle, and the decrease in the amount of milk produced by dairy cattle, as the result of the irritation and loss of blood occasioned by great numbers of ticks.

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\*Note—Excerpt from Farmers' Bulletin 378 by H. W. Graybill, published by United States Department of Agriculture.



Map showing the region where the cattle tick is to be found, the shaded portion indicating the infected area

5. The prevention of Southern breeders from exhibiting their stock in the North.

6. The decreased price that Southern cattle bring on the market on account of the restrictions placed upon them.

7. The considerable expense incurred each year by the Federal Government and the infested states in establishing quarantine lines and in enforcing regulations to prevent the spread of Texas fever.

Various writers have estimated the annual loss due to the tick at from \$40,000,000 to \$100,000,000. These figures should be ample argument, even to the most conservative, for the eradication of the tick.

The South needs more and better live stock and a larger and better dairy industry, and these objects would be greatly promoted by the destruction of the tick. Furthermore, the increased production of live stock, by reason of its important bearing in maintaining and improving the fertility of the soil, would be of distinct benefit in increasing the yield of field crops. An incidental though important advantage of stock raising and dairying would be found in the distribution of the farmer's income throughout the year, enabling him to live on a cash basis. It can thus be seen that the benefits which would accrue to Southern agriculture from the extermination of the cattle tick would be very great and far-reaching.

## Life History of the Tick

Before methods of eradication can be carried out intelligently and successfully, it is necessary to know the life history of the tick, and the influence of temperature, moisture, and other climatic conditions on the various stages of its existence. These matters will therefore be taken up first, it being understood that whenever the term "tick" or "cattle tick" is used, it refers to the one species or kind.

The usual host for this tick is the cow or ox. Frequently, however, horses, mules, deer, and sometimes even sheep serve as hosts. But none of these latter animals, with the possible exception of deer, are susceptible to tick fever, consequently they suffer from the tick as a simple parasite and not as a transmitter of disease, although they must be considered in plans for eradication.

Only a part of the development of the tick takes place on the host; the rest of the development occurs on the pasture occupied by the host.

## Development on the Ground

In tracing the life history of the cattle tick it will be convenient to begin with the large, plump, olive-green female tick, somewhat more than half an inch in length, attached to the skin of the host. During the few preceding days she has increased enormously in size as a consequence of drawing a large supply of blood.



When fully engorged she drops to the ground, and at once, especially if the weather is warm, begins to search for a hiding place on moist earth beneath leaves or any other litter which may serve as a protection from the sun and numerous enemies. The female tick may be devoured by birds or destroyed by ants, or may perish as the result of unfavorable conditions, such as low temperature, absence or excess of moisture, and many other conditions; so that many which fall to the ground are destroyed before they lay eggs.



The Female Tick and Its Eggs

One tick is capable of laying 4,000 eggs. The period of depositing eggs lasts about one week. The eggs hatch in about three weeks in summer; in fall and winter they lay dormant. Each egg is capable of furnishing one seed tick

Egg laying begins during the spring, summer, and fall months in from two to twenty days, and during the winter months in thirteen to ninety-eight days. The eggs are small, elliptical-shaped bodies, at first of a light amber color, later changing to a dark brown, and are about one-fiftieth of an inch in length. As the eggs are laid they are coated with a sticky secretion which causes them to adhere in clusters and, no doubt, serves the purpose of keeping them from drying out. During egg laying the mother tick gradually shrinks in size and finally is reduced to about one-third or one-fourth her original size. Egg laying is greatly influenced by temperature, being retarded or even arrested by low temperatures. It is completed in from four days in the summer to one hundred and fifty-one days, beginning in the fall. During this time the tick may deposit from a few hundred to more than 5,000 eggs. After egg laying is completed the mother tick has fulfilled her purpose and dies in the course of a few days.

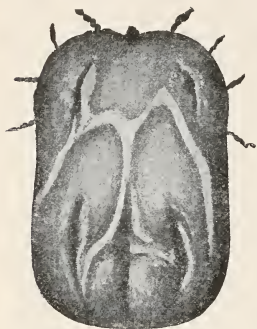
After a time, ranging from nineteen days in the summer to one hundred and eighty-eight days during the fall and winter, the eggs begin to hatch. From each egg issues a small, oval, six-legged larva or seed tick, at first amber colored, later changing to a rich brown. The seed tick, after crawling slowly over and about the shell from which it has emerged, usually remains more or less quiescent for several days, after which it shows great activity, especially if the weather is warm, and ascends the nearest vegetation, such as grass, other herbs, and even shrubs.



Seed Tick

After emerging from the eggs it crowds upon spears of grass, and as soon as possible attaches itself to a passing cow. If no cattle give it succor it will die of starvation in about four months during the summer; but in winter it remains dormant; therefore it is possible for it to live in a pasture or field several months

Since each female lays an enormous mass of eggs at one spot, thousands of larva will appear in the course of time at the same place and will ascend the near-by vegetation and collect on the leaves. This



**Engorged Female Tick**

Having completed its development on the animal, and having been filled to its entire capacity with its host's nourishing blood, it is ready to fall to the ground where it seeks seclusion and comfort to deposit its eggs

begins when the larva or seed ticks reach a favorable host, such as a cow. They crawl up over the hair of the host and commonly attach themselves to the skin of the escutcheon, the inside of the thighs and flanks, and to the dewlap. They at once begin to draw blood and soon increase in size. In a few days the young tick changes from a brown color to white, and in from five to twelve days sheds its skin. The new form has eight legs instead of six, and is known as a nymph. In from five to eleven days after the first molt the tick sheds its skin and becomes sexually mature. It is at this stage that males and females are with certainty distinguishable for the first

instinct of the seed ticks to climb upward is a very important adaptation to increase their chances of reaching a host. If the vegetation upon which they rest is disturbed, they become very active and extend their long front legs upward in a divergent position, waving them violently in an attempt to seize hold of a host.

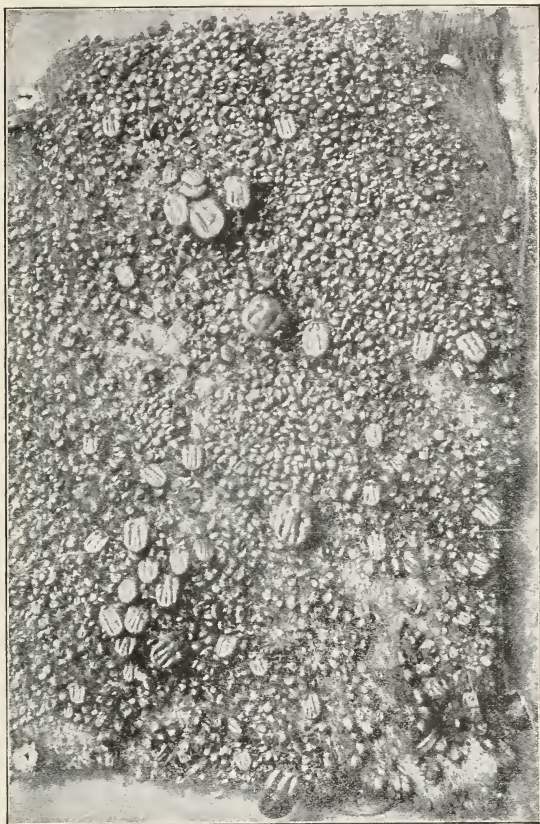
The seed tick during its life on the pasture takes no food and consequently does not increase in size, and unless it reaches a host to take up the parasitic portion of its development, it dies of starvation. The endurance of seed ticks is very great, however, as they have been found to live nearly eight months during the colder part of the year.

## Development on Cattle

The parasite phase of development



**Ticks of all sizes shingled on hide of a cow, all sucking the life's blood**



Portion of steer's hide showing the Texas fever tick

time. The male emerges from his skin as a brown, oval tick, about one-tenth of an inch in length. He has reached his growth and goes through no further development. He later shows great activity, moving about more or less over the skin of the host. The female, at the time of molting, is slightly larger than the male. She never

shows much activity, seldom moving far from her original point of attachment. She still has to undergo most of her growth. After mating, the female increases very rapidly in size, and in from twenty-one to sixty-six days after attaching to a host as a seed tick she becomes fully engorged and drops to the pasture, to repeat the cycle of development.

## Summary of Life History

To sum up, on the pasture there are found three stages of the tick—the engorged female, the egg, and the larva; and on the host are found four stages—the larva, the nymph, the sexually mature adult of both sexes, and the engorged condition of the female.

## Methods of Eradication

In undertaking measures for eradicating the tick, it is evident that the pest may be attacked in two locations, namely, on the pasture and on the cattle.

In freeing pastures the method followed may be either a direct or an indirect one. The former consists in excluding all cattle, horses, and mules from pastures until all the ticks have died from starvation. The latter consists in permitting the cattle and other animals to continue on the infested pasture and treating them at regular intervals with oils or other agents destructive to ticks and thus preventing engorged females from dropping and reinfesting the pasture. The larva on the pasture, or those which hatch from eggs laid by females already there, will all eventually meet death. Such of these as get upon the cattle from time to time will be destroyed by the treatment, while those which fail to find a host will die in the pasture from starvation.

## What Tick Eradication Means

The eradication of the cattle tick in the South means the awakening of a new industry. It means an immense market for the producers of registered cattle of all breeds.

The United States Bureau of Animal Industry is co-operating with the officials of the Southern states in striving to accomplish this laudable work in the shortest possible time.

The tick has been the cause of the lack of interest in cattle raising, because it made necessary the establishing of an ocean to ocean quarantine line, separating the cattle grown in the South from the best markets of the Union.

Deprive any commodity, grown or manufactured, from the best markets of the world, I care not what it may be, cotton, corn, cattle,





Cow dying from tick infection

or automobiles and the result cannot be but failure. Such it has been, most unfortunately, with cattle in the quarantined area.

The extermination of the tick means the revolutionizing of the live stock industry of the South, and so far as the state of Mississippi is concerned, the people have decreed that this evolution shall come within two years.

## Specifications for the Construction of a Cattle Dipping Vat

The site selected for the vat should be dry. The excavation should be

Seven feet deep

Twenty-seven feet long at the top

Thirteen " " " bottom

Four " wide " top

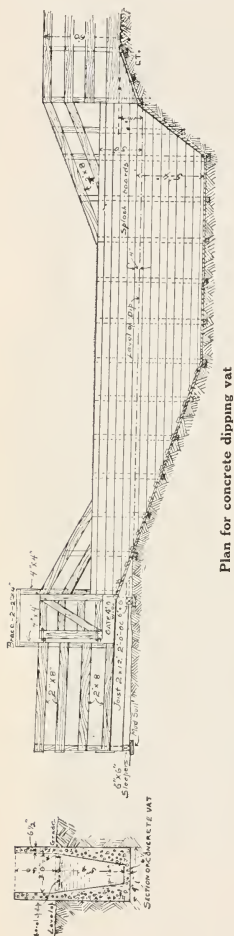
Thirty inches " " bottom

The walls and floor should be six inches thick. The wooden frames should be constructed of 2 x 4 inch braces, on the outside of which 1-inch boards are tacked. After the concrete has set, take out frame, and plaster inside of vat with a mixture of 1 part cement and 2 parts sand. The walls of the vat should be built one foot above the surface of the ground. The slide where the cattle go into the vat should be three feet long with a fall of two feet. The concrete should be made as follows:

Cement	-	-	-	-	1 part
Sand	-	-	-	-	2½ parts
Gravel or Broken Rock	-	-	-	-	5 parts

all thoroughly mixed.

The dipping vat should be covered with a shed and provided with convenient pens, chute, and dripping pen.

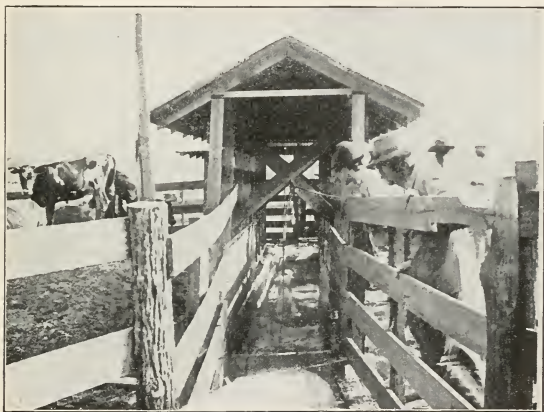


The arsenical solution has proved the most effective of any of the preparations that have been used to destroy ticks.

The following formula is most commonly used:

Sodium Carbonate	(Sal soda)	24 lbs.
White Arsenic	- - - - -	8 lbs.
Pine Tar	- - - - -	1 gallon
Water	- - - - -	500 gallons

Mix the soda and arsenic within a kettle containing 30 gallons of water; boil it 30 minutes; let this solution cool to 140 degrees, then slowly add the pine tar.



Dipping vat in operation at Jackson, Mississippi

## Keep These Facts in Mind

The cattle tick is a disease-transmitting parasite peculiar to the bovine specie.

The disease is known as splenetic or tick fever otherwise known as bloody murrain.

The tick is a blood-sucking parasite which fattens at the expense of the infested cow.

It is on account of the tick that the national quarantine line was established north of which cattle may not be moved except under rigid restrictions.

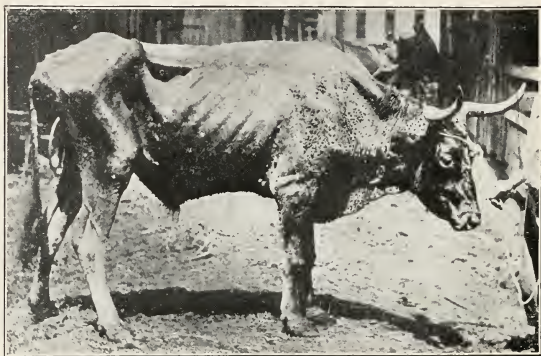
Cattle not of the tick-infested area when brought in to improve the grade of stock become infested with the tick and a large percentage of them die of tick fever.

The milch cow infested with the tick gives at least ten per cent less milk by reason of its parasites.

The tick injures the hides so they sell for one-half cent per pound less than similar hides not so affected.

Tick-infested cattle are not immune from tick fever.

Every year in every tick-infested country the loss of cattle from the disease would more than pay for the eradication of the tick.



**Tick infected steer—August 12, 1911. Weight 730 pounds**

The tick curtails opportunities for an open market for your cattle; hence, a substantial curtail in price.

The tick causes an unsanitary and unwholesome condition of the animals infected. Their products are undesirable for human consumption.

It is not human to allow the tick to suck the vitality from the dumb brutes we are in duty bound to care for.

You cannot fatten cattle and feed the ticks upon them.

We need more and better cattle.

We need more home-produced beef, pork, and mutton.

We need more barn-yard fertilizer.



We need more pastures, more green cover crops, more clover, etch, cow peas, velvet beans, and alfalfa.

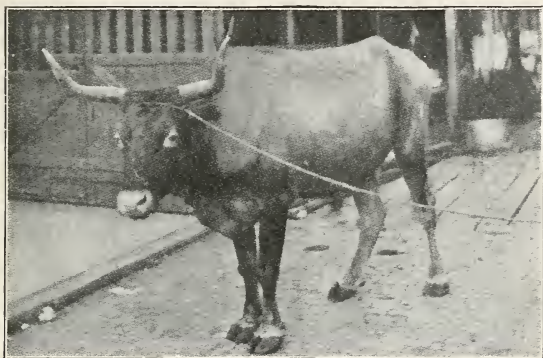
We need more feed pens filled with cattle to consume the feeds we raise.

We need more patriotism and work and less politics to get rid of the cattle tick.

The cattle tick is costing us up to one hundred million dollars annually.

If all the cattle on a farm, be it large or small, are regularly dipped once every two weeks for a period of a few months, in a properly prepared arsenical solution, all of the ticks will be eradicated.

The area of Mississippi is 46,340 square miles—an area of 143,000 square miles has been freed of ticks since 1905.



Same steer free of ticks—October 12, 1911. Weight, 1,015 pounds

Mothers! Do not feed your children milk from tick-infested cows; it is unwholesome, unsanitary, and unsafe.

Hon. E. F. Noel, Governor of Mississippi, says:

“Tick eradication work has done much for Mississippi. None who tried it intelligently, so far as I have heard, were otherwise than pleased and benefited. I sincerely hope the work will be continued and advanced in this state until we are in at least free territory for the whole of Mississippi. There was never greater need of improvement and extension of cattle raising than in the South at this time. It promotes crop rotation, diversified farming and utilization of valuable fertilizers.”



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